

Herpetofauna of Crișul Repede/Sebes Körös and Barcău/Berettyó¹ river basins

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Abstract

This paper presents the results of herpetological investigations in Crișul Repede and Barcău river basins. In these areas, 14 amphibian and 11 reptile species live. Based on the occurrence of the specimens, the degree of threatening of species was estimated as follows: 12% are common, 44% are rare, 20% are vulnerable, 20% are endangered and 4% have an uncertain position.

Keywords: herpetofauna, amphibians, reptiles, threat degree, Crișul Alb river, Barcău river.

Introduction

The Crișul Repede river springs at an altitude of about 700 m, close to the Izvorul Crișului village. It has a length of about 148 km and the hydrographic basin has a surface of about 2425 square km. The Crișul Repede system drains the northern sides of the Gilău-Vlădeasa and Pădurea Craiului Mountains. Two of its main tributaries, the Valea Iadului and Drăganul, spring in the Vlădeasa Mountain, at an altitude of about 1500 m.

The herpetofauna of the Crișul Repede basin has been well studied at only three localities (Defileul Crișului Repede, Oradea and Stâna de Vale). In literature, very few observations of the rest of the territory exist. 13 amphibian and 11 reptile species are known altogether.

1 The first name is Romanian, and the second Hungarian.

Material and method

The investigations were performed in July 1995 and sporadically before and after this period. Also, data from literature and those obtained by Márton Venczel (Muzeul Țării Crișurilor – Oradea), Dan Cogălniceanu (Faculty of Biology – Bucharest), and Octavian Craioveanu (student at our faculty) were being used. In this way we wish to express our special thanks to them.

In July 1995 all the hydrographic basins of Crișul Repede along with the two main tributaries and Barcău river were covered. Few specimens were collected and preserved, especially *Rana ridibunda*, for observing the role of this species in the aquatic ecosystems.

Crișul Repede basin was divided into three main zones: mountainous - between 1500 m and 900 m, hilly - between 900 and 300 m and plain - below 300 m. The differences between these zones were determined because of the spreading of the herpetofauna.

Results

Nr	Species	A	B	C
1	<i>Salamandra salamandra</i>	3CR	3CR, Stâna de Vale	-
2	<i>Triturus alpestris</i>	-	Stâna de Vale	-
3	<i>Bombina variegata</i>	2CR, 3CR	2CR, 3CR, Stâna de Vale	-
4	<i>Bufo bufo</i>	2CR, 3CR	2CR, 3CR, Stâna de Vale	-
5	<i>Bufo viridis</i>	-	Stâna de Vale	-
6	<i>Rana temporaria</i>	2CR, 3CR	2CR, 3CR, Stâna de Vale	-
1	<i>Lacerta agilis</i>	2CR, 3CR	Stâna de Vale	-
2	<i>Lacerta vivipara</i>	2CR, 3CR	2CR, Stâna de Vale	-
3	<i>Anguis fragilis</i>	2CR, 3CR	2CR, Stâna de Vale	-
4	<i>Natrix natrix</i>	2CR, 3CR	-	-
5	<i>Vipera berus</i>	3CR	Stâna de Vale	-

Table 1. Herpetofauna of the mountainous zones. Collecting points: 2CR (Drăganul valley); 3CR (Valea Iadului valley). A: species found by us; B: species recorded in literature; C: species which could exist in the ecosystems.

Nr	SPECIES	A	B	C
1	<i>Salamandra salamandra</i>	-	1CR,8CR,9CR	-
2	<i>Triturus cristatus</i>	5CR,8CR,9CR	1CR,8CR,9CR,11CR	-
3	<i>Triturus vulgaris</i>	5CR,8CR,9CR	1CR,4CR,8CR,9CR	-
4	<i>Bombina bombina</i>	-	8CR,9CR,11CR	-
5	<i>Bombina variegata</i>	1CR,4CR,5CR,8CR,9CR,1B	1CR,4CR,8CR,9CR	-
6	<i>Pelobates fuscus</i>	-	-	x
7	<i>Bufo bufo</i>	1CR,4CR	1CR,4CR,8CR,9CR	-
8	<i>Bufo viridis</i>	8CR	11CR	-
9	<i>Hyla arborea</i>	1CR	11CR	-
10	<i>Rana ridibunda</i>	8CR,9CR	-	-
11	<i>Rana dalmatina</i>	8CR,9CR,11CR,1B	11CR	-
12	<i>Rana temporaria</i>	1CR,4CR,1B	1CR,4CR,8CR,9CR, 11CR	-
13	<i>Rana arvalis</i>	-	-	x

1	<i>Emys orbicularis</i>	-	-	x
2	<i>Lacerta agilis</i>	1CR,4CR,5CR	4CR,8CR,9CR	-
3	<i>Lacerta viridis</i>	8CR,9CR	8CR,9CR	-
4	<i>Podarcis muralis</i>	1CR,4CR,6CR,8CR,9CR	8CR,9CR	-
5	<i>Anguis fragilis</i>	1CR,4CR,8CR,9CR	1CR,4CR,8CR,9CR	-
6	<i>Natrix natrix</i>	1CR,8CR,11CR	4CR,11CR	-
7	<i>Natrix tessellata</i>	8CR,9CR	8CR,9CR	-
8	<i>Coronella austriaca</i>	-	8CR,9CR	-
9	<i>Elaphe longissima</i>	-	8CR,9CR	-
10	<i>Vipera berus</i>	-	1CR	-

Table 2. Herpetofauna of the hilly zones. Collecting points: 1CR (Drăganul valley); 4CR (Valea Iadului valley); 5CR (Izvorul Crișului village); 1B (Barcău valley). A, B, C - similar to Table 1.

Nr	SPECIES	A	B	C
1	<i>Salamandra salamandra</i>	-	Oradea	-
2	<i>Triturus cristatus</i>	13CR,4B,6B	Oradea, Bailel Mai	-
3	<i>Triturus vulgaris</i>	6B	Oradea, Bailel Mai	-
4	<i>Bombina bombina</i>	10CR,12CR	Oradea	-
5	<i>Bombina variegata</i>	7CR,13CR,4B,6B	-	-
6	<i>Pelobates fuscus</i>	12CR	Oradea, Bailel Mai	-
7	<i>Bufo bufo</i>	-	Oradea, Bailel Mai	-
8	<i>Bufo viridis</i>	-	Oradea, Bailel Mai	-
9	<i>Hyla arborea</i>	6B	Oradea, Bailel Mai	-
10	<i>Rana ridibunda</i>	7CR,10CR,12CR,13CR, 14CR,17,4B,5B	Oradea, Bailel Mai, Baile Felix, Marghita	-
11	<i>Rana dalmatina</i>	6B	Bailel Mai, Marghita	-
12	<i>Rana arvalis</i>	-	-	x
1	<i>Emys orbicularis</i>	12CR,14CR	Oradea Baile Felix	-
2	<i>Lacerta agilis</i>	13CR,14CR,17,4B	13CR	-
3	<i>Lacerta viridis</i>	13CR,4B,6B	Oradea	-
4	<i>Podarcis muralis</i>	-	-	x
5	<i>Anguis fragilis</i>	-	Oradea	-
6	<i>Natrix natrix</i>	17,4B,6B	Oradea, Bailel Mai	-
7	<i>Natrix tessellata</i>	-	Oradea, Bailel Mai	-
8	<i>Coronella austriaca</i>	-	Oradea	-
9	<i>Elaphe longissima</i>	-	Nusfalau	-
10	<i>Vipera berus</i>	-	Oradea	-

Table 3. Herpetofauna of the plain zone. Collecting points: 7CR (Aleşd); 10CR (Cheresig-downstream Oradea); 12CR (Fughiu-upstream Oradea); 13CR (Tileagd); 14CR (Szeghalom-Hungary); 17 (Szentes-Hungary); 2B (Sântimreu); 5B (Szeghalom-Hungary); 6B(Voivozi, on Bistra- tributary of Barcău river). A, B, C - similar to Table 1

Nr	SPECIES	mountain zone	hill zone	plain zone	global
1	<i>Salamandra salamandra</i>	R	R	V	R
2	<i>Triturus alpestris</i>	R	?	-	R
3	<i>Triturus cristatus</i>	-	R	R	R
4	<i>Triturus vulgaris</i>	-	R	R	R
5	<i>Bombina variegata</i>	R	R	V	R
6	<i>Bombina bombina</i>	-	V	R	V
7	<i>Pelobates fuscus</i>	-	?	E	E
8	<i>Bufo bufo</i>	R	R	V	R
9	<i>Bufo viridis</i>	V	V	R	V
10	<i>Hyla arborea</i>	-	V	V	V
11	<i>Rana ridibunda</i>	-	C	C	C
12	<i>Rana dalmatina</i>	-	R	V	R
13	<i>Rana temporaria</i>	R	R	-	R
14	<i>Rana arvalis</i>	-	?	?	?
1	<i>Emys orbicularis</i>	-	?	E	E
2	<i>Lacerta agilis</i>	R	C	C	C
3	<i>Lacerta viridis</i>	-	R	V	V
4	<i>Lacerta vivipara</i>	R	-	-	R
5	<i>Podarcis muralis</i>	-	V	?	V
6	<i>Anguis fragilis</i>	R	C	R	R
7	<i>Natrix natrix</i>	R	C	C	C
8	<i>Natrix tessellata</i>	-	R	R	R
9	<i>Coronella austriaca</i>	-	E	E	E
10	<i>Elaphe longissima</i>	-	E	E	E
11	<i>Vipera berus</i>	V	E	EX	E

Table 4. Situation of the herpetofauna in the Crișul Repede and Barcău river basins:
C=common; R=rare; V=vulnerable; E=endangered; Ex=extinct; ?=uncertain condition

Herpeto fauna	mountain zone	hill zone	plain zone
amphibians	6 sp: 5R; 1V	14 sp: 1C; 7R; 3V; 3?	12 sp: 1C; 4R; 5V; 1E; 1?
Reptiles	5 sp: 4R; 1V	10 sp: 3C; 2R; 3E; 1?	10 sp: 2C; 2R; 1V; 3E; 1Ex; 1?
Total	11 sp: 10R; 1V	24 sp: 4C; 9R; 3V; 3E; 4?	22 sp: 3C; 6R; 6V; 4E; 1Ex; 2?

Table 5. Centralized situation of the herpetofauna in the Crișul Repede and Barcău river basins, in the three zones. Abbreviations as in Table 4.

group	C	R	V	E	Ex	?	Total
amphibians	1	8	3	1	-	1	14
reptiles	2	3	2	4	-	-	11
TOTAL	3	11	5	5	-	1	25
%	12	44	20	20	-	4	100

Table 6. Percentages of herpetofauna species and their threat degree. Abbreviations as in Table 4

Discussion

Without any doubt, 6 amphibian and 5 reptile species can be found in the mountainous area. Of these species, 10 are rare and one is vulnerable, the *Bufo viridis*, being here at the northern border of its spreading area. Other species have a reduced population, especially *Rana temporaria*, collected and killed in spring by the inhabitants for culinary purposes, and *Vipera berus*, killed because of its potential danger.

The richest herpetofauna can be found in the hilly area: 11 amphibian and 9 reptile species. This seems normal because of the diversity of the ecosystem. Of the amphibians, it is mainly the presence of three species: *Triturus alpestris*, although a mountainous - subalpine species in our country, reaches the hilly zone in the Apuseni Mountains

(Metaliferi Mt., at 7-800 m altitude and Highis-Drocea Mt., at 4-500 m altitude); *Pelobates fuscus*, spreads from the plain to 700 m altitude, can live in some ecosystems; and *Rana arvalis*, a species less studied in our country, has been recorded in Ierului valley, northern from Barcău.

Of the reptiles, it is mainly the presence of *Emys orbicularis*, which can be found in the plain zone of these hydrographic basins. Of the 20 existing species, only 4 are common, 9 are rare, 3 are vulnerable, 3 are endangered and 4 have an uncertain position. The most threatened are the three snake species, *Coronella austriaca*, *Elaphe longissima* and *Vipera berus*. The people don't know that two of them are not venomous and kill them on first sight. Comparatively, in the Deva town zone, in the Mureş river basin, at the same altitude, live 27 species of herpetofauna (15 amphibian and 12 reptile species) of which 6 are common, 10 are rare, 5 vulnerable and 5 endangered (*Triturus alpestris*, *Pelobates fuscus*, *Emys orbicularis*, *Lacerta praticola* and *Vipera berus*).

In the plain area, the situation is similar; the presence of 19 species is without any doubt: 11 amphibian and 8 reptile. The main species: *Rana arvalis* and *Podarcis muralis* - a thermophilous species with an islander spreading, closely related to a rocky ecosystem. Of the 19 species, 3 are common, 6 are rare, 6 are vulnerable and 4 are endangered; one is extinct: *Vipera berus* disappeared from the Oradea -Băile Felix area.

The reasons, both for hilly and plain areas, are destruction of favourable ecosystems and utilisation of pesticides. Destruction of ecosystems means:

- reclaiming of swamps, puddles and marshes, corroborated with destruction of thicket;
- modifying of the depth of underground water by hydropower stations;
- reducing of forests, destruction of shrubs and brambles in grasslands and hayfields;
- destruction of rocky ecosystems by rock exploitation (e.g. Poieni area, where the presence of quarries drastically reduced the reptile populations, only very few *Podarcis muralis* specimens can be observed at the moment.

Pesticide utilisation lead to concentration of toxins in amphibian and reptile organisms, which are secondary consumers.

Conclusion

In the studied area, live 25 herps species: 14 amphibians and 11 reptiles; of these, 12% are common, 44% are rare, 20% are vulnerable, 20% are endangered and 4% have an uncertain position. We find this to be an alarming situation, considering that no improvements can be expected in the near future.

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